

CLAIMS:

1. A device for measuring flow in a fluid, comprising:

- a) a cavitation unit (10, 30) for generating cavitation bubbles (3) in the fluid;
- b) a particle-measuring unit (10, 20) for detecting the movement of cavitation bubbles (3) generated by the cavitation unit.

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2. A device as claimed in claim 1, characterized in that the cavitation unit comprises a cavitation light laser source (30) and/or an ultrasonic source.

3. A device as claimed in claim 1, characterized in that the particle-measuring unit (10, 20) is designed to measure particle movement with the aid of phase-Doppler anemometry (22) and/or Doppler shift (21).

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4. A device as claimed in claim 1, characterized in that the particle-measuring unit is designed to determine particle movement from the light emitted by the particles (3).

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5. A facility for invasive intervention, comprising a catheter (16) having an optical unit (10) that is disposed at the catheter tip and that can receive light selectively from a focus region (2) situated outside the catheter and/or beam it into the focus region (2), in which process the radial position of the focus region (2) can be adjusted externally.

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6. A facility as claimed in claim 5, characterized in that the optical unit (10) can be rotated around the catheter axis relative to the catheter (16).

7. A facility as claimed in claim 5, characterized in that the catheter (16) comprises a bundle (15) of optical waveguides that connects the optical unit (10) to the beginning of the catheter.

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8. A facility as claimed in claim 5, characterized in that it comprises a scanning unit (20) that is designed to vary the position of the focus region (2) systematically and to

analyze light picked up by the optical unit (10) from the respective focus region (2) with regard to characteristic properties of the focus area.

9. A facility as claimed in claim 5, comprises in that it comprises a spectrometer
5 for the spectral analysis of light picked up from the focus region (2).

10. A facility as claimed in claim 5, characterized in that it comprises a particle-
measuring unit (20) that is designed to generate a modulated light field for phase-Doppler
anemometry in the focus region (2) via the optical unit (10).

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11. A facility as claimed in claim 5, characterized in that it comprises an
activation unit that is designed to inject light via the optical unit (10) into the focus region (2)
in order to initiate local processes therein as a result of interaction with matter.

12. A facility as claimed in claim 11, characterized in that the activation unit (20)
15 comprises a cavitation light laser source (30) and is designed to generate cavitation bubbles
(3) in the focus region (2).

13. A method of measuring flow in a fluid, wherein cavitation bubbles (3) are
20 generated in the fluid and the movement of the cavitation bubbles (3) is observed.

14. A method of determining the position of a vessel wall (1), wherein light is
picked up from a focus region (2) that is continuously displaced in the vessel and a
qualitative change in the light picked up is detected.

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